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ABSTRACT

This issue analyzed the income/cost ratios of a college investment decision for individuals. The analysis for men and women was done separately, because men and women have very different incomes at similar levels of educational attainment. Calculations were performed for each year from 1967 through 1999. Benefit (income) data were derived from the Census Bureau, while college cost data are from the National Center for Education Statistics. Main conclusions were: (1) a college education is a profitable investment; (2) for those who say they cannot afford college, the appropriate reply might be that they cannot afford not to go to college; (3) about the only thing more expensive than attending college is not attending college; and (4) most college educations are at least as good an investment in 1999 as they were three decades ago. The issue also examines education enlistment standards and attrition in military service, and analyzes the U.S. tax burden. (EV)

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Postsecondary Education
OPPORTUNITY

*The Mortenson Research Seminar on Public Policy Analysis of Opportunity for Postsecondary Education*

**Number 101** **www.postsecondary.org** **November 2000**

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# Private Economic Benefit/Cost Ratios of a College Investment for Men and Women 1967 to 1999

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Postsecondary Education
# OPPORTUNITY

*The Mortenson Research Seminar on Public Policy Analysis of Opportunity for Postsecondary Education*

Number 101 www.postsecondary.org November 2000

# Private Economic Benefit/Cost Ratios of a College Investment for Men and Women 1967 to 1999

A college education is an investment. Investments have benefits and costs. An investment is something into which one puts money with the expectation of a return or profit on the investment.

The annual costs of college are immediately apparent to prospective students and their parents. These costs often appear formidable. For the current 2000-01 academic year, The College Board reports national average costs of attendance as:

- Public 2-year, commuter: $7,024
- Public 4-year, commuter: $9,229
- Public 4-year, resident: $11,338
- Private 4-year, commuter: $21,704
- Private 4-year, resident: $24,946

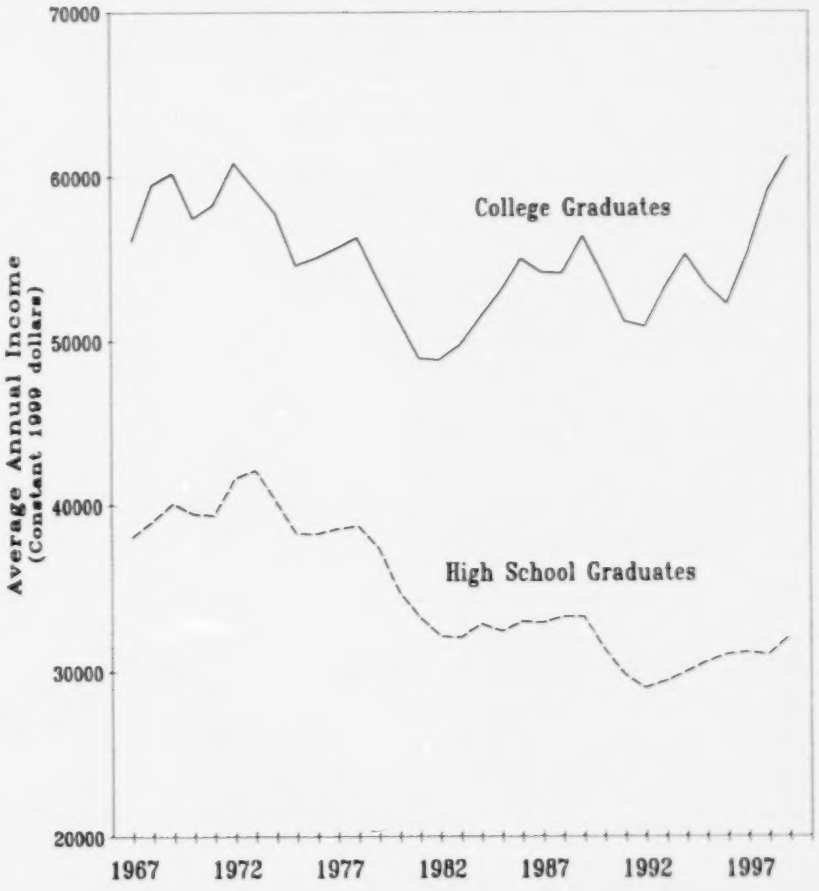
These costs usually exceed families' ability to pay from their own income and savings. Ability to pay is measured by the Federal Methodology used to determine financial need for need-based student financial aid programs.

The benefits from a college education are usually less apparent to prospective students and their parents than are college attendance costs. These benefits are lifelong and take many forms. But mainly they begin after the student graduates from college, and thus are not immediately apparent to the student.

Foremost among these benefits from a college education is the increased income that accrues to the college-educated compared to the incomes of those with only a high school education. For examples, in 1999:

- For males, the lifetime income of a college graduate will be about $1,160,000 more than that of a high school graduate.

Average Annual Income for Male
High School and College Graduates Age 25 and Over
1967 to 1999




Source: Census Bureau

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- For females, the lifetime income of a college graduate will be about $600,000 more than that of a high school graduate.
- For families, the lifetime income of families headed by persons with a bachelor's degree will be about $1,600,000 more than the incomes of families headed by persons with a high school diploma.

In this analysis we examine the income/cost ratios of a college investment decision for individuals. We do this for men and women separately, because men and women have very different incomes at similar levels of educational attainment. Because college attendance costs are nearly identical for men and women, the differences in the benefit/cost ratios are attributable purely to differences in the incomes between men and women at similar levels of educational attainment. We perform these calculations for each year from 1967 through 1999.

The results of this analysis produce these quite astounding results (for 1999):

- For males graduating from a public 4-year institution in four years with a bachelor's degree, each $1.00 spent on institutional charges produced $34.85 in increased lifetime income.
- For females graduating from a public 4-year college or university with a bachelor's degree, each $1.00 spent on institutional charges returns $18.06 in increased lifetime income.
- For males graduating from private 4-year institutions, each $1.00 spent on institutional charges over 4 years yields $13.83 in increased lifetime income.
- For females graduating from private 4-year colleges or universities, each $1.00 spent on institutional charges over 4 years produced $7.17 in increased lifetime income.

Moreover, between 1967 and 1999, these benefit/cost ratios have held up quite well. While the costs of college attendance have grown sharply in real terms since about 1980, so too has the income differential between those with a high school education and those with a college education.

The most obvious conclusions from these findings are:

- A college education is an extraordinarily profitable investment.
- For those who say they cannot afford college, the appropriate reply is that they cannot afford not to go to college.
- About the only thing more expensive than attending college is not attending college.
- Most college educations are at least as good an investment in 1999 as they were three decades ago.

In this analysis we examine the benefit data--increased income--from the Census Bureau, along side the college cost data collected and reported by the National Center for Education Statistics. This is a very narrow and highly simplified exploration of the investment value of a college education. But its simplicity is a virtue in that it so clearly reveals the huge private returns to an expenditure/investment in college, and that this remarkable economic value has changed little between 1967 and 1999.

## Complications

A more refined analysis of the economic value of a college investment decision for individuals would embellish this simple calculation with at least the following factors.

*Addition of benefits.* There is more to a college education than the long-term economic benefits used here. Beyond money, people with more education live longer and happier lives than

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**Mission Statement**

This research letter is founded on two fundamental beliefs. First, sound public social policy requires accurate, current, independent, and focused information on the human condition. Second, education is essential to the development of human potential and resources for both private and public benefit. Therefore, the purpose of this research letter is to inform those who formulate, fund, and administer public policy and programs about the condition of and influences that affect postsecondary education opportunity for all Americans.

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those with less formal education.

In addition there are short term benefits to college enrollment that are more properly classified under consumption than investment. The lifestyles available on most college campuses are attractive and not available elsewhere.

*Addition to costs.* There are more costs than institutional charges, which include only tuition, fees, room and board. Other costs while attending college include books and supplies, transportation, personal and medical care. There are also opportunity costs of college attendance.

*Subtraction to costs.* Not all students pay these costs. Financial aid, particularly grants and scholarships, reduce the costs of college attendance for those who receive such aid.

*Present value.* Present and future values differ by the time value of money. Future benefits and costs can be discounted to present value by the selection of an appropriate discount rate.

Those interested in these refinements to our simplified benefit/cost calculations here are invited to review Chapter 4: Higher Education as Private Investment, in *The Economic Value of Higher Education* by Larry Leslie and Paul Brinkman (American Council on Education, 1988).

**The Data**

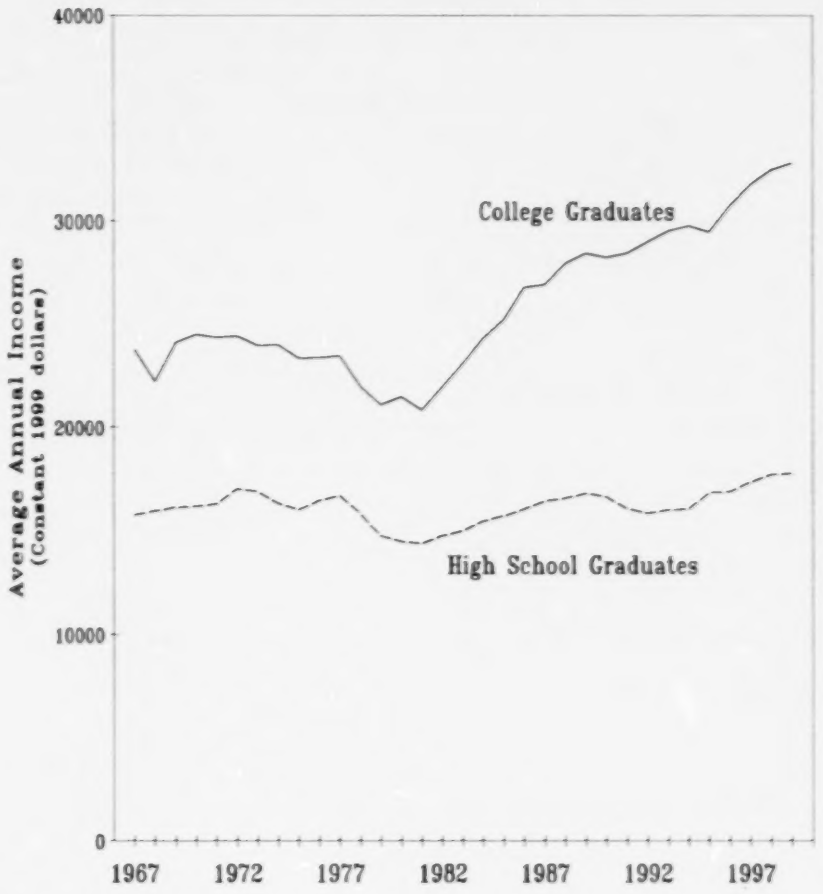
In this analysis the *benefits* of a college education investment are the increased incomes of college graduates compared to the incomes of high school graduates. The *costs* of a college education investment are the institutional charges paid to attend college.

The data on income by educational attainment are collected by the Census Bureau in the March Current Population Survey for the prior calendar year. These data are published in the P60 series of Current Population Reports usually under the title *Money Income in the United States*. Recent reports in this series are available for downloading from the Census Bureau's website at:

http://www.census.gov/hhes/www/income.html

In addition, there are valuable time-series tables of historical data on income by education from this page on the Census Bureau's website.

Average Annual Income for Female
High School and College Graduates Age 25 and Over
1967 to 1999




Source: Census Bureau

The data on institutional charges used in this analysis come primarily from the *Digest of Education Statistics* published by the National Center for Education Statistics. In the 1999 edition of the *Digest*, see Table 317 for the institutional charges data used in this analysis.

More recent data not published in the *Digest* was derived from The College Board's annual report titled *Trends in College Pricing*. Copies of this report may be downloaded from The College Board's website at:

http://collegeboard.org/press/cost00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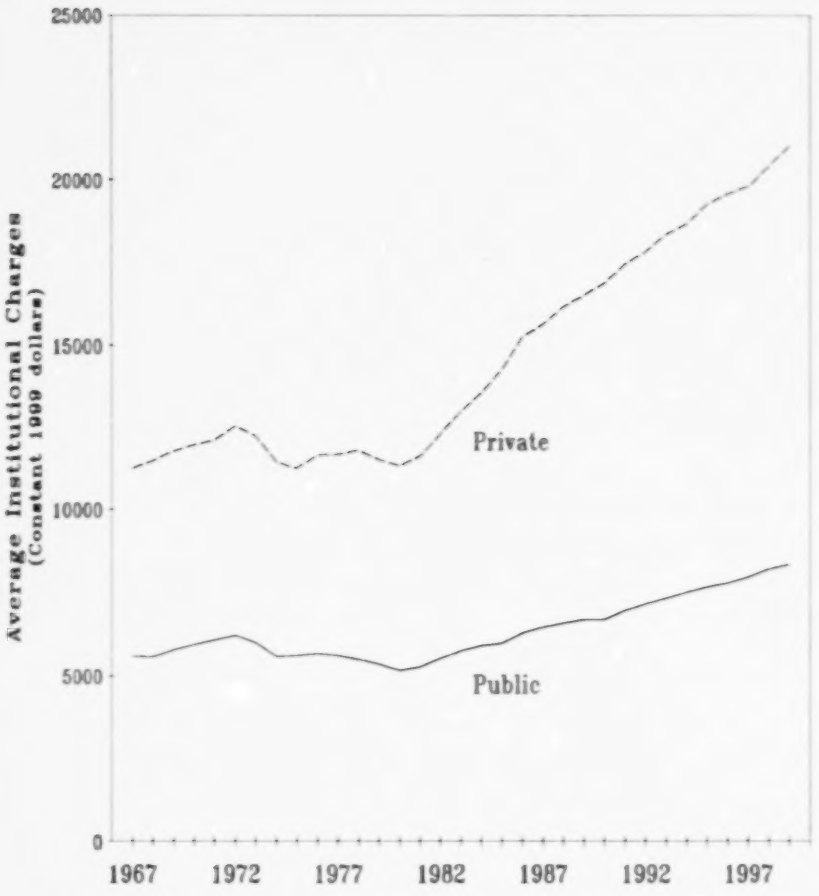
## Average Annual Institutional Charges at Public and Private 4-Year Institutions 1967 to 1999




Source: National Center for Education Statistics

### Benefits

According to the Census Bureau, in 1999 average annual income for a male age 25 and over with a bachelor's degree was $61,198, compared to $32,127 for a male with a high school diploma. The college graduate's income was $29,071 more than that of the high school graduate. Assuming a working lifetime of 40 years, the college graduate will receive in income about $1,162,840 more than will the high school graduate.

Actually, the income differential between high school and college graduated males has increased since 1967. In constant dollars, the male bachelor's degree income has fluctuated between about $48,000 and $61,000 during the last three decades. While the 1999 figure is the highest on record at $61,198, it is just barely above the 1969 figure of $60,185. The constant dollar average annual incomes of males with high school diplomas and bachelor's degrees from college are shown in the chart on page 1 of this issue of OPPORTUNITY.

What has been most striking is the decline in the real income of high school educated males since the early 1970s. From the peak in 1973 at $42,093, the 1999 income of $32,127 represents a loss of about 24 percent.

It is this growing gap between the incomes of college and high school educated males that continues to make a college education such an attractive choice. It is not that college graduate incomes are so much better, but rather that the incomes of high school educated males are so much worse than they have been in recent decades.

A similar picture emerges for high school and college educated women. As shown in the chart on page 3, incomes for females age 25 and over with a high school diploma averaged $17,736 in 1999, compared to $32,803 for women with bachelor's degrees. This means that college graduates had incomes that averaged $15,067 more than those with a high school diploma. Over a 40 year working lifetime, this converts to $602,680.

While the incomes of high school educated women are higher than they have ever been, they are even farther behind those of college educated women than they have ever been. Between 1967 and 1999, real incomes of high school educated women have increased by 13 percent, while those of college educated women have increased by 38 percent.

### Costs

College and university charges include tuition, fees, room and board. They are the same for both men and women, despite differences in post-college income prospects.

In 1999 public 4-year colleges and universities charged an average of $8,341 for these tuition, fees, room and board. Thus, to get a bachelor's degree in 4 years, the cost of a college education is $33,364.

Similarly, in 1999 national average institutional charges at private 4-year colleges and universities were $21,020. Over four years to get a bachelor's degree, this cumulates to $84,080.

In constant dollars, institutional charges in both public and private institutions remained nearly constant between 1967 and 1980. These data are shown in the chart on page 4. However, after 1980 real institutional charges began steady and substantial growth. Between 1980 and 1999, real institutional charges in public institutions increased by 62 percent. In private institutions they increased by 86 percent.

**Benefit/Cost Ratios**

Our evaluation of a college education as an investment is a simple ratio of benefits divided by costs. The benefits are increased lifetime income. The costs are four years of institutional charges. The resulting ratio is the dollar gained over the dollar spent.

*Males, public 4-year institutions.* In 1999 the benefit/cost ratio for a male receiving a bachelor's degree from an average cost public 4-year college or university was 34.85. Expressed another way, for each dollar spent on tuition, fees, room and board over four years, the return was $34.85 in increased lifetime income. A dollar spent produced a return of $34.85.

As shown in the chart on this page, the benefit/cost ratio has fluctuated within a fairly narrow range between 1967 and 1999. The low was $27.17 in 1996, and the high was $36.65 in 1968.

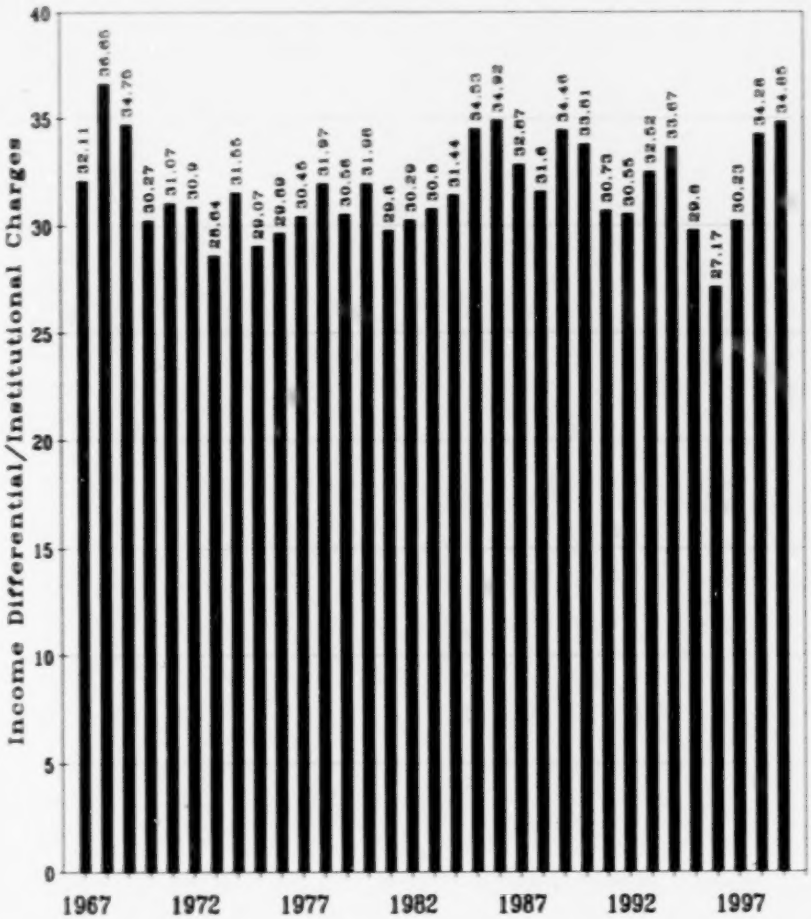
There does not appear to be much of a trend to these data. It's about flat. This means that the private investment value of a college education for a male graduating from a public college or university has remained about constant over the last three decades. Certainly the real cost of a college education has increased sharply since 1980. But so too has the income differential between a high school and a college graduate. In fact, the flatness of this trend indicates that as real institutional charges have increased over the last twenty years, so too has the income differential--and at a nearly identical rate.

What this constant benefit/cost ratio means is that the economic value of a college education today is just about the same as what it was one or two or three decades ago for males graduating from a public 4-year institution.

*Females, public 4-year institutions.* The chart on page 6 shows the benefit/cost ratios for females graduating from average cost public 4 year colleges or universities between 1967 and 1999. In 1999, each dollar spent on institutional charges over four years at a public institution produced $18.06 of increased lifetime income.

The same chart shows how the relationship between benefits and costs

Benefit/Cost Ratio for Males at Public 4-Year Institutions 1967 to 1999



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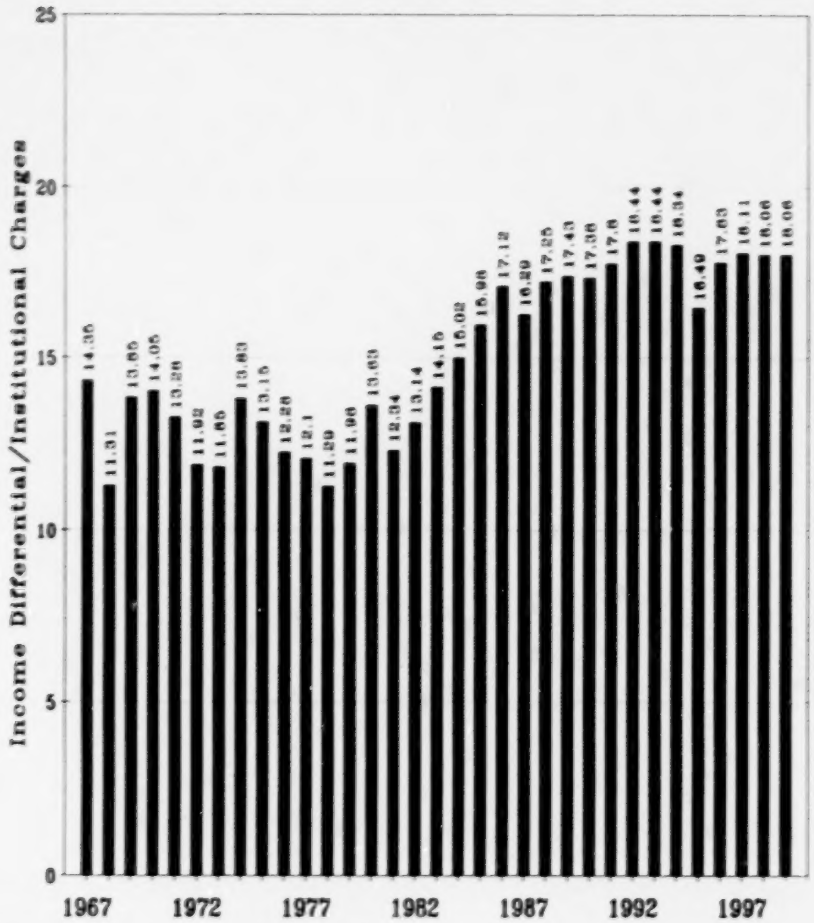
## Benefit/Cost Ratio for Females at Public 4-Year Institutions 1967 to 1999




has changed over time. Between 1967 and the early 1980s, the economic value of a public college education for women hovered around $12 to $13 per dollar spent on institutional charges. Then between the early 1980s and the early 1990s, the return jumped to about $18. Since the early 1990s the value had held fairly steady at close to $18.00.

*Males, private 4-year institutions.* The first chart on page 7 shows the return for males on a private college education investment between 1967 and 1999. In 1999 a male with a bachelor's degree from an average cost private 4-year college or university could expect $13.83 in increased lifetime income for each dollar he spent on institutional charges over four years.

Over the last three decades, this ratio has trended downward, from a high of $17.83 in 1968 to a low of $10.81 in 1996. The 1998 and 1999 ratios are close to those of the early 1980s, however. The slight decline is far less important than the substantial positive return on investment, however.

*Females, private 4-year institutions.* The second chart on page 7 shows the return to females of a private college education. In 1999 a female with a bachelor's degree from an average cost private 4-year college or university could expect a return of $7.17 for each dollar spent on institutional charges over a 40 year working lifetime.

This ratio has increased somewhat over the last two decades. This means that income differential between a bachelor's degree and a high school diploma has increased somewhat faster than have private institutional charges, particularly since the late 1970s.

### Summary

This simple analysis of the benefits and costs of a higher education investment decision has sought to bring together the apparent and formidable costs of a college education with the more obscure and distant economic benefits that result from that investment decision. The results are clear and compelling.

The institutional charges to get a college education are what students, and especially their parents, see. They are very large, like the cost of a house. And especially for parents with several children who have spent huge sums to raise their children, usually in a tuition free K-12 education system, the prospect of $34,000 for a public college degree, or worse yet $84,000 for a private college degree must be staggering.

Moreover, for the last 20 years these institutional charges have grown faster than inflation, family income and grant assistance. We find in amazement that so many families (correctly) decide to plunge ahead with college not knowing what will happen during or after college.

Their faith, however, is justified. The economic value of a college education is very large and still growing. A



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male with a bachelor's degree averages $29,071 more in annual income than does the male with a high school diploma. The lifetime difference is nearly $1.2 million. The female will earn $15,067 more, or $600 thousand over a 40 year working lifetime.

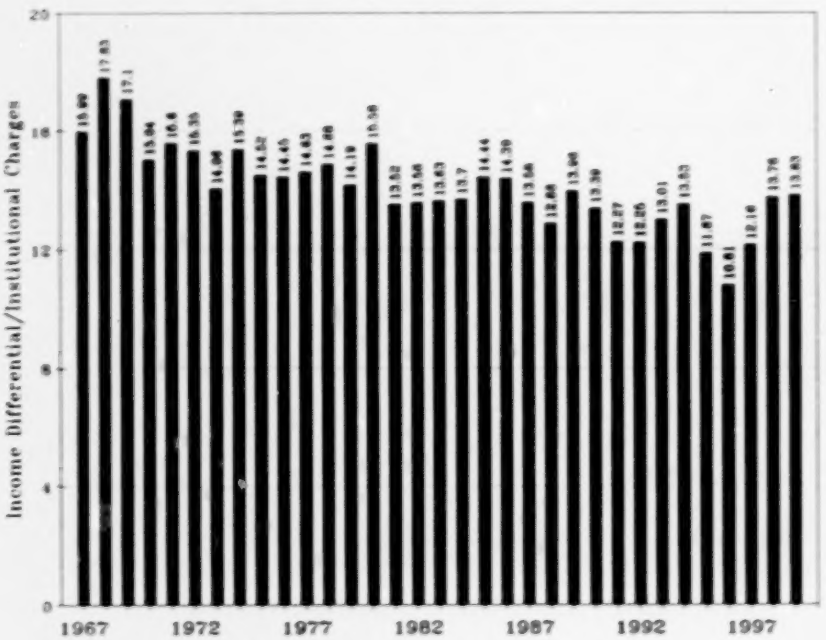
The high school graduate will not starve, but most of what he receives in income will be spent on meeting basic necessities of living over which he has very little control. All of this difference in income between the high school and college graduate is discretionary income available for choices that enrich life in this time and place of material abundance.

Of course there is much more to a college education than increased income provides.

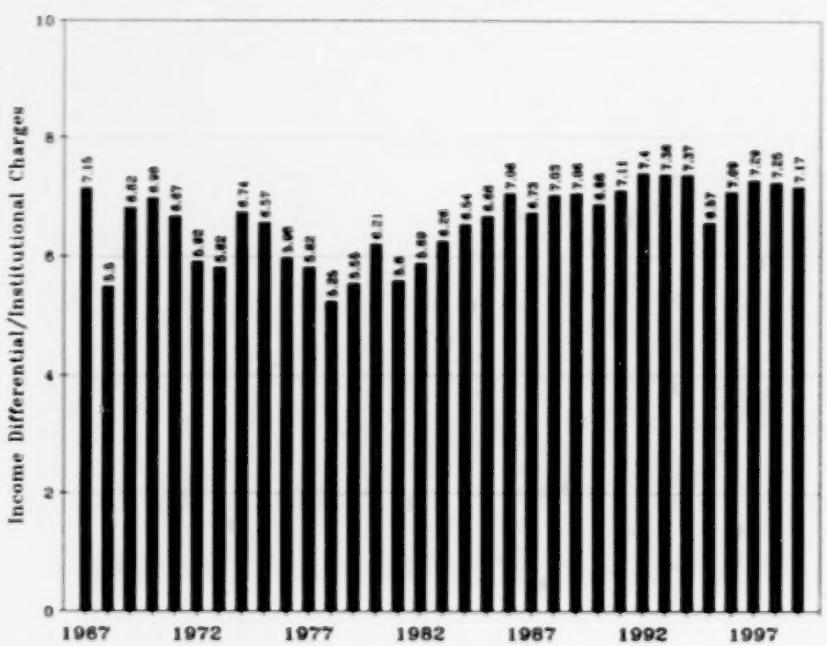
Generally, more education leads to greater economic stability and security, more prestigious employment, better access to health care, less dependency on government assistance, longer lifespans, better dietary and health practices, healthier children, greater use of seat belts, more continuing education, greater internet access, greater attendance at live performances, greater participation in leisure and artistic activities, more book purchases, better academic performance of children, higher voting rates, greater knowledge of government, greater community service, more volunteer work, greater tolerance of unconventional literature, greater community leadership, and less criminal activity and incarceration.

These non-financial benefits reflect choices available to and made by better educated adults. Presumably they reflect a more fully engaged and lived life. These benefits accrue to the families in which educated people live, their communities and cities, their states, and ultimately to the entire nation.

**Benefit/Cost Ratio for Males at Private 4-Year Institutions 1967 to 1999**




**Benefit/Cost Ratio for Females at Private 4-Year Institutions 1967 to 1999**



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## Males - Benefit/Cost Ratios

| | Mean Income | | | | Public 4-Year Cost | | | Private 4-Year Cost | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Bachelor's Degree | HS Graduate | Difference | Lifetime Difference | Institutional Charges | Degree Cost | Income to Cost Ratio | Institutional Charges | Degree Cost | Income to Cost Ratio |
| Year | A | B | C=A-B | D=C*40 | E | F=E*4 | G=D/F | H | I=H*4 | J=E/J |
| 2000 | | | | | $8,737.00 | $34,948.00 | | $22,204.00 | $88,816.00 | |
| 1999 | $61,198.00 | $32,127.00 | $29,071.00 | $1,162,840.00 | $8,341.00 | $33,364.00 | $34.85 | $21,020.00 | $84,080.00 | $13.83 |
| 1998 | $57,801.00 | $30,318.00 | $27,483.00 | $1,099,320.00 | $8,018.00 | $32,072.00 | $34.28 | $19,970.00 | $79,880.00 | $13.76 |
| 1997 | $53,152.00 | $29,958.00 | $23,194.00 | $927,760.00 | $7,673.00 | $30,692.00 | $30.23 | $19,070.00 | $76,280.00 | $12.16 |
| 1996 | $49,147.00 | $29,218.00 | $19,929.00 | $797,160.00 | $7,334.00 | $29,336.00 | $27.17 | $18,442.00 | $73,768.00 | $10.81 |
| 1995 | $48,856.00 | $27,952.00 | $20,904.00 | $836,160.00 | $7,014.00 | $28,056.00 | $29.80 | $17,612.00 | $70,448.00 | $11.87 |
| 1994 | $49,094.00 | $26,634.00 | $22,460.00 | $898,400.00 | $6,670.00 | $26,680.00 | $33.67 | $16,602.00 | $66,408.00 | $13.53 |
| 1993 | $46,197.00 | $25,501.00 | $20,696.00 | $827,840.00 | $6,365.00 | $25,460.00 | $32.52 | $15,904.00 | $63,616.00 | $13.01 |
| 1992 | $42,801.00 | $24,408.00 | $18,393.00 | $735,720.00 | $6,020.00 | $24,080.00 | $30.55 | $15,009.00 | $60,036.00 | $12.25 |
| 1991 | $41,808.00 | $24,314.00 | $17,494.00 | $699,760.00 | $5,693.00 | $22,772.00 | $30.73 | $14,258.00 | $57,032.00 | $12.27 |
| 1990 | $42,281.00 | $24,553.00 | $17,728.00 | $709,120.00 | $5,243.00 | $20,972.00 | $33.81 | $13,237.00 | $52,948.00 | $13.39 |
| 1989 | $41,911.00 | $24,768.00 | $17,143.00 | $685,720.00 | $4,975.00 | $19,900.00 | $34.46 | $12,284.00 | $49,136.00 | $13.96 |
| 1988 | $38,397.00 | $23,614.00 | $14,783.00 | $591,320.00 | $4,678.00 | $18,712.00 | $31.60 | $11,474.00 | $45,896.00 | $12.88 |
| 1987 | $36,907.00 | $22,436.00 | $14,471.00 | $578,840.00 | $4,403.00 | $17,612.00 | $32.87 | $10,659.00 | $42,636.00 | $13.58 |
| 1986 | $36,150.00 | $21,700.00 | $14,450.00 | $578,000.00 | $4,138.00 | $16,552.00 | $34.92 | $10,039.00 | $40,156.00 | $14.39 |
| 1985 | $34,243.00 | $20,916.00 | $13,327.00 | $533,080.00 | $3,859.00 | $15,436.00 | $34.53 | $9,228.00 | $36,912.00 | $14.44 |
| 1984 | $32,056.00 | $20,479.00 | $11,577.00 | $463,080.00 | $3,682.00 | $14,728.00 | $31.44 | $8,451.00 | $33,804.00 | $13.70 |
| 1983 | $29,718.00 | $19,145.00 | $10,573.00 | $422,920.00 | $3,433.00 | $13,732.00 | $30.80 | $7,759.00 | $31,036.00 | $13.63 |
| 1982 | $28,278.00 | $18,598.00 | $9,680.00 | $387,200.00 | $3,196.00 | $12,784.00 | $30.29 | $7,126.00 | $28,504.00 | $13.58 |
| 1981 | $26,694.00 | $18,139.00 | $8,555.00 | $342,200.00 | $2,871.00 | $11,484.00 | $29.80 | $6,330.00 | $25,320.00 | $13.52 |
| 1980 | $25,337.00 | $17,181.00 | $8,156.00 | $326,240.00 | $2,550.00 | $10,200.00 | $31.98 | $5,594.00 | $22,376.00 | $14.58 |
| 1979 | $23,399.00 | $16,288.00 | $7,111.00 | $284,440.00 | $2,327.00 | $9,308.00 | $30.56 | $5,013.00 | $20,052.00 | $14.19 |
| 1978 | $22,010.00 | $15,152.00 | $6,858.00 | $274,320.00 | $2,145.00 | $8,580.00 | $31.97 | $4,609.00 | $18,436.00 | $14.88 |
| 1977 | $20,222.00 | $14,017.00 | $6,205.00 | $248,200.00 | $2,038.00 | $8,152.00 | $30.45 | $4,240.00 | $16,960.00 | $14.63 |
| 1976 | $18,796.00 | $13,051.00 | $5,745.00 | $229,800.00 | $1,935.00 | $7,740.00 | $29.69 | $3,977.00 | $15,908.00 | $14.45 |
| 1975 | $17,618.00 | $12,354.00 | $5,264.00 | $210,560.00 | $1,811.00 | $7,244.00 | $29.07 | $3,625.00 | $14,500.00 | $14.52 |
| 1974 | $17,083.00 | $11,884.00 | $5,199.00 | $207,960.00 | $1,648.00 | $6,592.00 | $31.55 | $3,379.00 | $13,516.00 | $15.39 |
| 1973 | $15,794.00 | $11,218.00 | $4,576.00 | $183,040.00 | $1,598.00 | $6,392.00 | $28.64 | $3,255.00 | $13,020.00 | $14.06 |
| 1972 | $15,256.00 | $10,433.00 | $4,823.00 | $192,920.00 | $1,561.00 | $6,244.00 | $30.90 | $3,142.00 | $12,568.00 | $15.35 |
| 1971 | $14,158.00 | $9,566.00 | $4,592.00 | $183,680.00 | $1,478.00 | $5,912.00 | $31.07 | $2,943.00 | $11,772.00 | $15.60 |
| 1970 | $13,372.00 | $9,185.00 | $4,187.00 | $167,480.00 | $1,383.00 | $5,532.00 | $30.27 | $2,783.00 | $11,132.00 | $15.04 |
| 1969 | $13,258.00 | $8,827.00 | $4,431.00 | $177,240.00 | $1,275.00 | $5,100.00 | $34.75 | $2,591.00 | $10,364.00 | $17.10 |
| 1968 | $12,418.00 | $8,148.00 | $4,270.00 | $170,800.00 | $1,165.00 | $4,660.00 | $36.65 | $2,395.00 | $9,580.00 | $17.83 |
| 1967 | $11,232.00 | $7,629.00 | $3,603.00 | $144,120.00 | $1,122.00 | $4,488.00 | $32.11 | $2,253.00 | $9,012.00 | $15.99 |
| 1966 | | | | | $1,096.00 | $4,384.00 | | $2,149.00 | $8,596.00 | |





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## Females - Benefit/Cost Ratios

| | Bachelor's Degree | Mean Income HS Graduate | Difference | Lifetime Difference | Public 4-Year Cost Institutional Charges | Degree Cost | Income to Cost Ratio | Private 4-Year Cost Institutional Charges | Degree Cost | Income to Cost Ratio |
|---|---|---|---|---|---|---|---|---|---|---|
| Year | A | B | C=A-B | D=C*40 | E | F=E*4 | G=D/F | H | I=H*4 | J=E/J |
| 2000 | | | | | $8,737.00 | $34,948.00 | | $22,204.00 | $88,816.00 | |
| 1999 | $32,803.00 | $17,736.00 | $15,067.00 | $602,680.00 | $8,341.00 | $33,364.00 | $18.06 | $21,020.00 | $84,080.00 | $7.17 |
| 1998 | $31,766.00 | $17,284.00 | $14,482.00 | $579,280.00 | $8,018.00 | $32,072.00 | $18.06 | $19,970.00 | $79,880.00 | $7.25 |
| 1997 | $30,574.00 | $16,678.00 | $13,896.00 | $555,840.00 | $7,673.00 | $30,692.00 | $18.11 | $19,070.00 | $76,280.00 | $7.29 |
| 1996 | $28,926.00 | $15,848.00 | $13,078.00 | $523,120.00 | $7,334.00 | $29,336.00 | $17.83 | $18,442.00 | $73,768.00 | $7.09 |
| 1995 | $26,927.00 | $15,359.00 | $11,568.00 | $462,720.00 | $7,014.00 | $28,056.00 | $16.49 | $17,612.00 | $70,448.00 | $6.57 |
| 1994 | $26,466.00 | $14,236.00 | $12,230.00 | $489,200.00 | $6,670.00 | $26,680.00 | $18.34 | $16,602.00 | $66,408.00 | $7.37 |
| 1993 | $25,579.00 | $13,844.00 | $11,735.00 | $469,400.00 | $6,365.00 | $25,460.00 | $18.44 | $15,904.00 | $63,616.00 | $7.38 |
| 1992 | $24,400.00 | $13,300.00 | $11,100.00 | $444,000.00 | $6,020.00 | $24,080.00 | $18.44 | $15,009.00 | $60,036.00 | $7.40 |
| 1991 | $23,237.00 | $13,104.00 | $10,133.00 | $405,320.00 | $5,693.00 | $22,772.00 | $17.80 | $14,258.00 | $57,032.00 | $7.11 |
| 1990 | $22,147.00 | $13,034.00 | $9,113.00 | $364,520.00 | $5,243.00 | $20,972.00 | $17.38 | $13,237.00 | $52,948.00 | $6.88 |
| 1989 | $21,140.00 | $12,471.00 | $8,669.00 | $346,760.00 | $4,975.00 | $19,900.00 | $17.43 | $12,284.00 | $49,136.00 | $7.06 |
| 1988 | $19,814.00 | $11,743.00 | $8,071.00 | $322,840.00 | $4,678.00 | $18,712.00 | $17.25 | $11,474.00 | $45,896.00 | $7.03 |
| 1987 | $18,347.00 | $11,176.00 | $7,171.00 | $286,840.00 | $4,403.00 | $17,612.00 | $16.29 | $10,659.00 | $42,636.00 | $6.73 |
| 1986 | $17,603.00 | $10,517.00 | $7,086.00 | $283,440.00 | $4,138.00 | $16,552.00 | $17.12 | $10,039.00 | $40,156.00 | $7.06 |
| 1985 | $16,288.00 | $10,120.00 | $6,168.00 | $246,720.00 | $3,859.00 | $15,436.00 | $15.98 | $9,228.00 | $36,912.00 | $6.68 |
| 1984 | $15,141.00 | $9,610.00 | $5,531.00 | $221,240.00 | $3,682.00 | $14,728.00 | $15.02 | $8,451.00 | $33,804.00 | $6.54 |
| 1983 | $13,793.00 | $8,934.00 | $4,859.00 | $194,360.00 | $3,433.00 | $13,732.00 | $14.15 | $7,759.00 | $31,036.00 | $6.26 |
| 1982 | $12,711.00 | $8,512.00 | $4,199.00 | $167,960.00 | $3,196.00 | $12,784.00 | $13.14 | $7,126.00 | $28,504.00 | $5.89 |
| 1981 | $11,360.00 | $7,817.00 | $3,543.00 | $141,720.00 | $2,871.00 | $11,484.00 | $12.34 | $6,330.00 | $25,320.00 | $5.60 |
| 1980 | $10,614.00 | $7,138.00 | $3,476.00 | $139,040.00 | $2,550.00 | $10,200.00 | $13.63 | $5,594.00 | $22,376.00 | $6.21 |
| 1979 | $9,184.00 | $6,402.00 | $2,782.00 | $111,280.00 | $2,327.00 | $9,308.00 | $11.96 | $5,013.00 | $20,052.00 | $5.55 |
| 1978 | $8,595.00 | $6,173.00 | $2,422.00 | $96,880.00 | $2,145.00 | $8,580.00 | $11.29 | $4,609.00 | $18,436.00 | $5.25 |
| 1977 | $8,529.00 | $6,063.00 | $2,466.00 | $98,640.00 | $2,038.00 | $8,152.00 | $12.10 | $4,240.00 | $16,960.00 | $5.82 |
| 1976 | $7,980.00 | $5,603.00 | $2,377.00 | $95,080.00 | $1,935.00 | $7,740.00 | $12.28 | $3,977.00 | $15,908.00 | $5.98 |
| 1975 | $7,537.00 | $5,155.00 | $2,382.00 | $95,280.00 | $1,811.00 | $7,244.00 | $13.15 | $3,625.00 | $14,500.00 | $6.57 |
| 1974 | $7,092.00 | $4,813.00 | $2,279.00 | $91,160.00 | $1,648.00 | $6,592.00 | $13.83 | $3,379.00 | $13,516.00 | $6.74 |
| 1973 | $6,383.00 | $4,489.00 | $1,894.00 | $75,760.00 | $1,598.00 | $6,392.00 | $11.85 | $3,255.00 | $13,020.00 | $5.82 |
| 1972 | $6,121.00 | $4,261.00 | $1,860.00 | $74,400.00 | $1,561.00 | $6,244.00 | $11.92 | $3,142.00 | $12,568.00 | $5.92 |
| 1971 | $5,915.00 | $3,952.00 | $1,963.00 | $78,520.00 | $1,478.00 | $5,912.00 | $13.28 | $2,943.00 | $11,772.00 | $6.67 |
| 1970 | $5,701.00 | $3,758.00 | $1,943.00 | $77,720.00 | $1,383.00 | $5,532.00 | $14.05 | $2,783.00 | $11,132.00 | $6.98 |
| 1969 | $5,309.00 | $3,543.00 | $1,766.00 | $70,640.00 | $1,275.00 | $5,100.00 | $13.85 | $2,591.00 | $10,364.00 | $6.82 |
| 1968 | $4,639.00 | $3,321.00 | $1,318.00 | $52,720.00 | $1,165.00 | $4,660.00 | $11.31 | $2,395.00 | $9,580.00 | $5.50 |
| 1967 | $4,759.00 | $3,149.00 | $1,610.00 | $64,400.00 | $1,122.00 | $4,488.00 | $14.35 | $2,253.00 | $9,012.00 | $7.15 |
| 1966 | | | | | $1,096.00 | $4,384.00 | | $2,149.00 | $8,596.00 | |

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# Educational Enlistment Standards and Attrition in Military Service

*OPPORTUNITY considers military service a form of postsecondary education and training, similar to collegiate and vocational postsecondary education and training available in the civilian sector. In effect, the military competes with colleges and universities for recent high school graduates. It recruits and screens potential enlistees. Many leave military service before completing the term of their enlistment, just as colleges loose students they enroll.*

*The processes are so similar that we review one aspect of the military experience with attrition here to see what insights it may offer collegiate recruiting and enrollment management.*

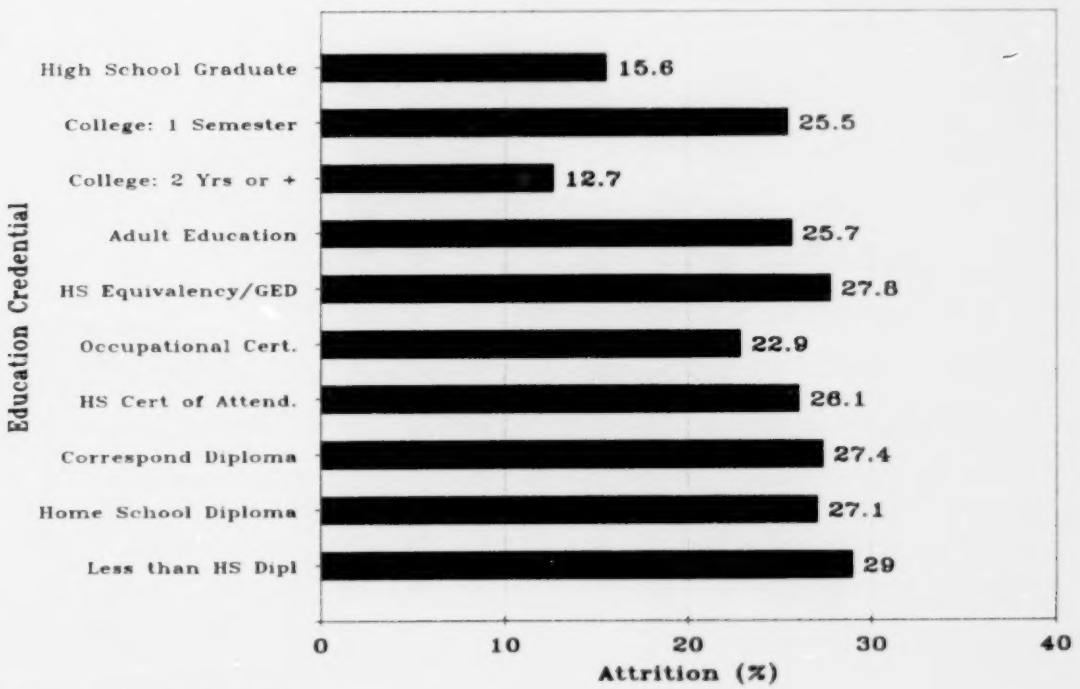
*In particular, we are interested here in the attrition experience of the military among those who enlist with GED certification compared to those who receive a regular high school diploma. OPPORTUNITY has been concerned about the shift in high school completion, away from regular high school graduation and toward alternative GED certification that has been occurring since 1983. (See OPPORTUNITY #87 for September 1999.)*

*The declining share of ninth grade students that receive a regular high school diploma at the end of twelfth grade appears to be a consequence of state efforts to raise the bar to high school graduation. Many if not most of these high school dropouts later seek high school equivalency certification through the GED.*

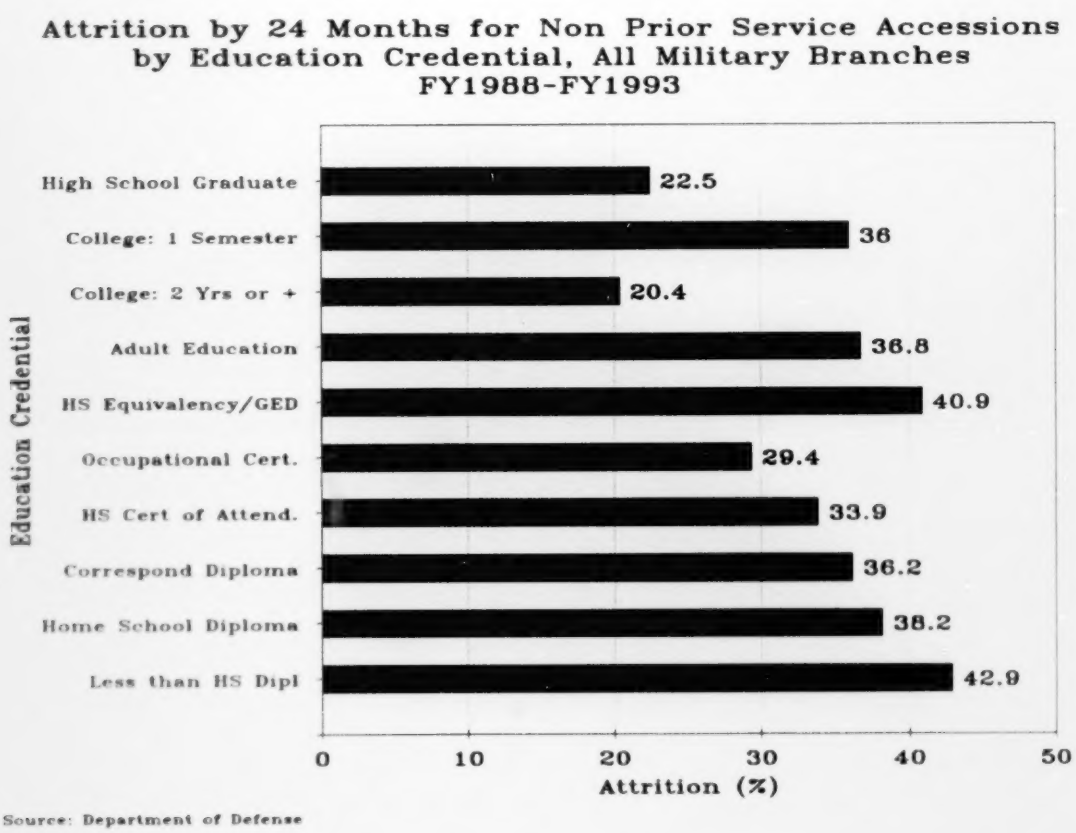
*Anecdotal evidence from higher education suggests that GED recipients often do not perform as well in college as do regular high school diploma recipients. Thus, here we examine the experience of GED recipients in military service. This has been well-studied by the Department of Defense, and the findings and conclusions are relevant and important to colleges and universities.*

Our report here is based on a 1996 report to Congress prepared by the Defense Department, and was supplied to us by Dr. Jane Arabian of DoD.

**Attrition by 12 Months for Non Prior Service Accessions by Education Credential, All Military Branches FY1988-FY1994**




Source: Department of Defense




Source: Department of Defense

*Educational Enlistment Standards: Recruiting Equity for GED Certificates.* (April 1996.) Report to Congress. Office of the Assistant Secretary of Defense, Force Management Policy.

### Military Accession and Attrition

Each year the Department of Defense enlists about 200,000 young men and women in the active duty military services--Army, Navy, Marine Corps and Air Force. Each recruit signs a contract for a specified period of service ranging from two to six years, and averaging 4 years. Each branch of the military makes substantial investments in recruiting and training in those who enlist for service.

Since 1973 military enlistment has been voluntary. In this All Volunteer Force (AVF), the average length of service is greater than it was during the draft era. However, failure to complete the initial period of obligation has been greater in the AVF era. About a third of each new recruit cohort (accession) leaves the military before their terms are completed. This is called attrition in the military (and in colleges).

Attrition is attributable to a variety of causes including medical causes. About 80 percent of attrition is described as failure to meet minimum behavioral or performance criteria. The AVF permits the expeditious separation of marginal, recalcitrant and reluctant recruits.

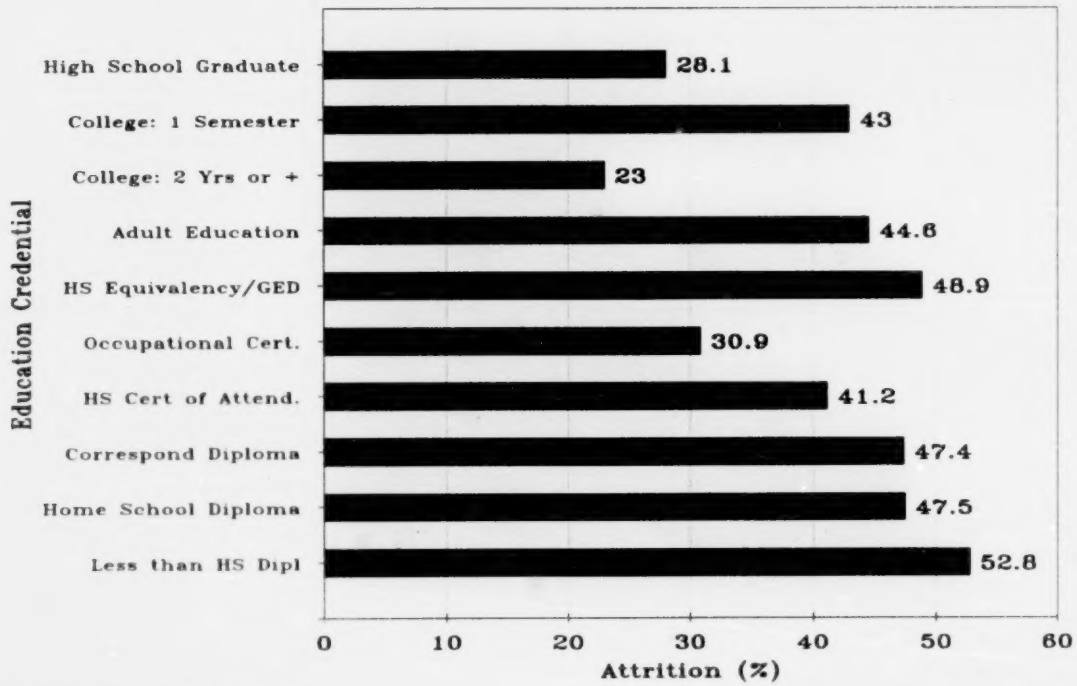
However, military attrition is expensive. Investments in recruiting and training of enlistees are lost in attrition. Thus, first-term attrition of enlisted personnel is managed through the selection of applicants.

### Education Credentials

Beginning in the 1960s, the military began emphasizing the high school diploma in enlistments. Those without high school diplomas or its equivalent were required to meet higher aptitude and moral standards. Subsequent research on attrition showed that the attrition among GED recipients was more like that of non-graduates than graduates. Therefore since the 1970s the military no longer considers GED holders equivalent to regular high school diploma graduates for enlistment purposes.

During the 1970s and 1980s, with the proliferation of secondary schools and

**Attrition by 36 Months for Non Prior Service Accessions by Education Credential, All Military Branches FY1988-FY1992**




Source: Department of Defense

certification, the Defense Department began studying the attrition rates for enlistees with different forms of secondary education credentials. In addition to the established GED, these included adult education diplomas, home schooled, and other equivalency certificates.

Out of this review emerged a three-tiered classification system according to attrition rates.

- Tier 1 included those credentials with the lowest attrition rates and thus preferred enlistment status. These included high school graduates and those who had attended college.
- Tier 2, with high attrition experience, included those with various alternative high school credentials.
- Tier 3 included those with less than a high school diploma.

**Attrition Experience**

The Defense Department attrition studies examined the performance of non prior service (NPS) accessions through 12, 24 and 36 month periods following enlistment. Cohorts of enlistees from the period FY1988 to FY1993 were studied.

The cohort studied for twelve month attrition included 1.5 million enlistees. The cohort studied for 24 month attrition included 1.3 million enlistees. The cohort studied for 36 month attrition included 1.1 million enlistees.

About 37 percent of accessions enter the Army, 32 percent enter the Navy, 15 percent enter the Marine Corps, and 16 percent enter the Air Force.

About 90 percent of all accessions enter with a high school diploma. Another 4 percent enter with some college. About 2.7 percent enter with a GED or other equivalent certification. The remaining 3.7 percent have other educational credentials.

At 12 months, the attrition rate for all enlistees was 16.4 percent. At 24 months it rose to 23.6 percent. By 36 months the attrition rate rose to 29.4 percent.

Here the Defense Department study breaks down attrition rates by education credentials.

- At 12 months, the attrition rates ranged from 12.7 percent for enlistees with 2 or more years of college to 29.0 percent for those who had less than a high school diploma. High school graduates had an attrition rate of 15.6 percent, while GED recipients had

an attrition rate of 27.8 percent.

- At 24 months the attrition pattern established at 12 months persists, but additional attrition has occurred at each educational credential. Attrition rates range from 20.4 percent for those with 2 years or more of college to 42.9 percent for those who have less than a high school diploma. High school graduates had an attrition rate of 22.5 percent compared to 40.9 percent for those with a GED or other equivalency certificate.
- At 36 months the attrition rate ranged from 23.0 percent for those with two years or more of college to 52.8 percent of those with less than a high school diploma. For high school graduates the attrition rate was 28.1 percent, compared to 48.9 percent for those with GED or other equivalency certificate.

The attrition experiences in the four active duty military services closely follow the above patterns. For example:

- High school graduate attrition experience at 24 months ranges from 18.0 percent in the Air Force to 23.6 percent in the Army.
- Equivalency certificate holders (GED) have attrition rates ranging from 30.1 percent in the Air Force to 43.5 percent in the Marine Corps.
- Those with two years or more of college had attrition rates that ranged from 14.8 percent in the Air Force to 24.1 percent in the Marine Corps.

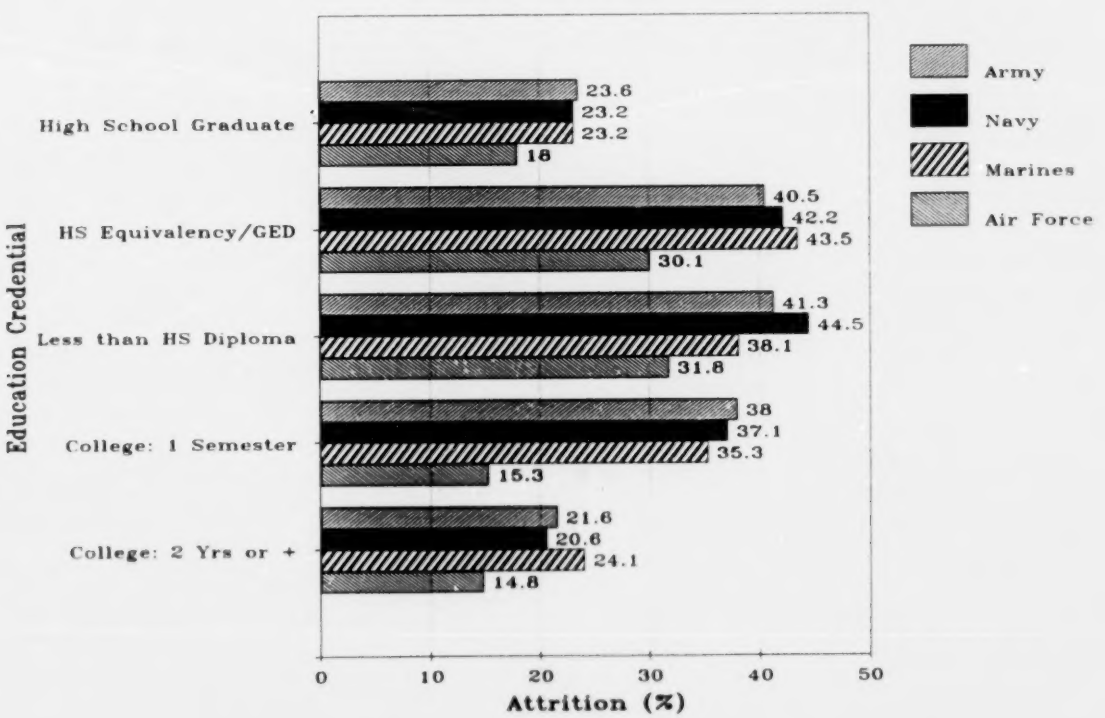
## Summary

This large scale study of attrition among 1.5 million military non prior service accessions between FY1988 and FY1994 shows clear differences in attrition across enlistees grouped by educational credentials.

- Those with the lowest attrition rates bring with them either two years or college or more, or come only with a high school diploma.
- Those with any other form of educational credential have considerably higher attrition rates.
- Compared to those entering with a high school diploma, the attrition rates for those with high school equivalency certification (GED) are nearly twice as high.

For the military, accession strategy focusing on high school graduates and those with two or more years of college appears to be an effective strategy to reduce recruitment and training costs of enlistees.

Attrition by 24 Months for Non Prior Service Accessions
by Education Credential and by Military Service Branch
FY1988-FY1993



# The Taxes We Pay

To listen to the two major party candidates during the recent presidential election campaign, a visiting Martian might think Americans must be the most heavily taxed people on earth. One candidate proposed middle income tax cuts, and the other proposed tax cuts mainly for the rich.

Given the effort made by the two presidential candidates on this issue, their campaigns must have detected among voters a sense that we are badly overtaxed and that voters would think their proposals important in deciding their vote.

**International Ranking**

If only it were true that Americans are badly overtaxed. But its not. By widely used and internationally accepted standards, the United States is the tax haven of the industrial world. Adding up all of the federal, state and local government taxes we pay, the United States ranks 26th among the 29 member countries of the Organization for Economic Cooperation and Development (OECD) in total tax receipts by government as a proportion of Gross Domestic Product, as shown in the chart on this page.

All of the federal, state and local government taxes paid by Americans only constitute 27.9 percent of our economic activity. In thirteen of the OECD countries, taxes comprise more than 40 percent of their GDPs.

**State Ranking**

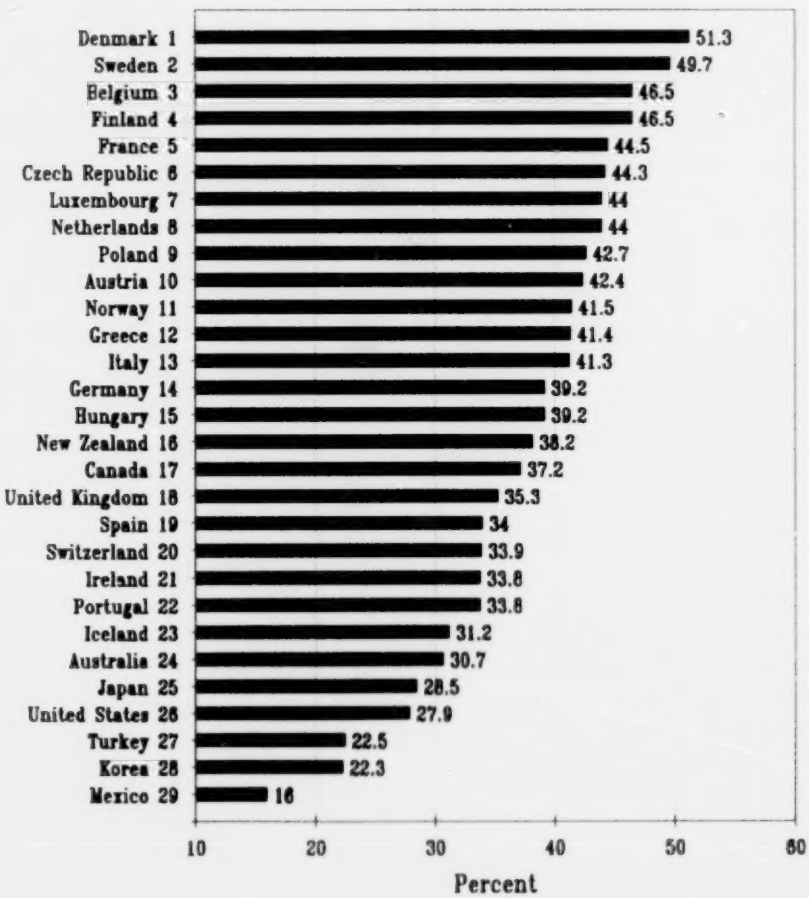
The chart on the next page shows federal, state and local taxes paid in each state as a proportion of each state's Gross State Product (GSP). This calculation is very similar to the chart on this page.

What this indicates is that taxes represent differing shares of gross state product across the 50 states. In FY1996 the range was from 21.5 percent of GSP in **Wyoming** to 31.3 percent in **Maryland**. This is a far narrower range across the 50 states than is the range across the 29 countries that are members of the OECD.

The variation across states represents a variety of factors, but are largely related to the tax base and rate of taxation on that base in each state. There are variations in federal tax revenues that relate in part to the incomes available for taxation.

More significantly, states have direct control and responsibility for taxing the economic values in their own states. Some choose lower rates (and receive fewer state services in return), while other states choose to tax themselves at higher rates (to receive more state services in return).

Total Tax Receipts
as a Percent of Gross Domestic Product
FY1995




Source: OECD

## Expenditures

Why are taxes important? Because governments--federal, state and local--all provide public services that we have requested and that many of us use every day. These public services are financed with our tax revenues.

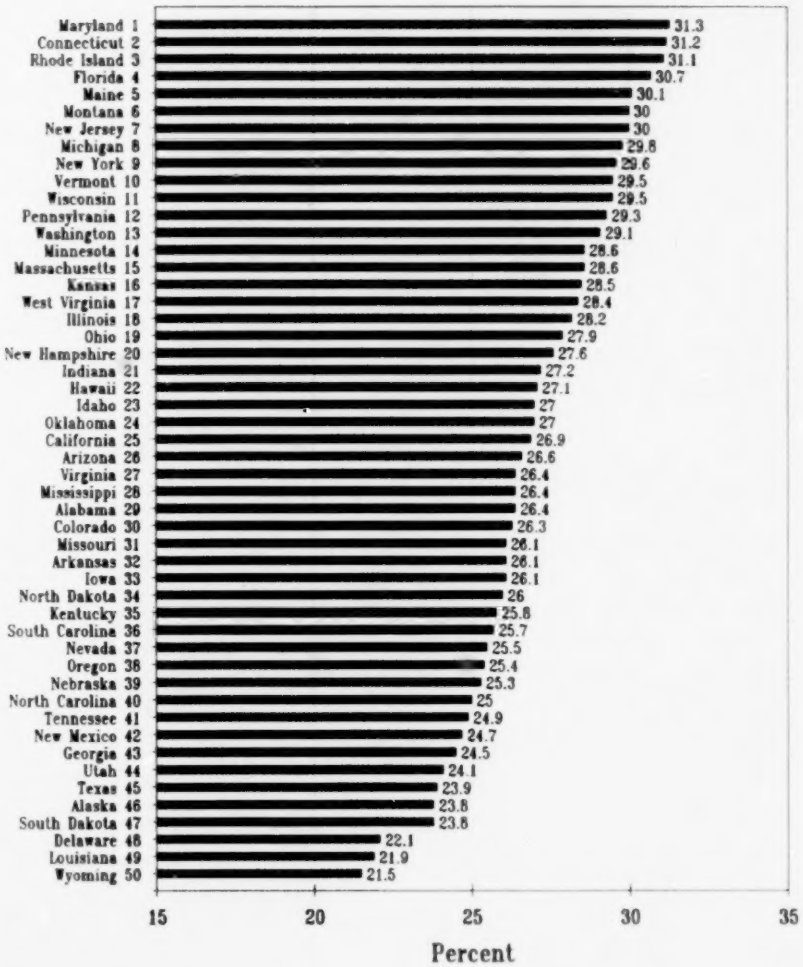
At the federal level, government expenditures in 1999 totaled $1,750.2 billion. By function for 1999 (as used by the Bureau of Economic Analysis in the National Income and Product Accounts) they were distributed as follows.

### Federal Expenditures

| | |
|---|---|
| **General public service** | **17.2%** |
| Executive and legislative | 1.7% |
| Tax collection, finan mgmnt | 0.4% |
| Net interest paid | 15.1% |
| **National defense** | **17.9%** |
| **Public order and safety** | **1.2%** |
| Police | 0.7% |
| Law courts | 0.4% |
| Prisons | 0.2% |
| **Economic affairs** | **5.2%** |
| General economic & labor affrs | 0.8% |
| Agriculture | 1.9% |
| Energy | 0.2% |
| Natural resources | 0.7% |
| Transportation | 0.9% |
| Other | 0.8% |
| **Housing & community service** | **1.7%** |
| **Health** | **21.5%** |
| **Recreation and culture** | **0.2%** |
| **Education** | **2.4%** |
| Elementary and secondary | 0.9% |
| Higher | 0.8% |
| Other | 0.6% |
| **Income security** | **32.7%** |
| Disability | 4.4% |
| Retirement | 19.4% |
| Welfare and social services | 5.5% |
| Unemployment | 1.4% |
| Other | 1.9% |

At the state and local government level, in 1999 expenditures totaled $1,092.7 billion. By funtion they were distributed as follows:

## Federal, State and Local Taxes as a Share of Gross State Product, FY1996




### State and Local Expenditures

| | |
|---|---|
| **General public service** | **9.4%** |
| Executive and legislative | 1.4% |
| Tax collection, finan mgmnt | 2.9% |
| Net interest paid | -0.3% |
| Other | 5.4% |
| **Public order and safety** | **14.3%** |
| Police | 5.6% |
| Fire | 2.0% |
| Law courts | 2.5% |
| Prisons | 4.2% |
| **Economic affairs** | **8.0%** |
| General economic & labor affrs | 1.3% |
| Agriculture | 0.4% |
| Energy | -0.6% |
| Natural resources | 0.8% |
| Transportation | 7.3% |
| Other | -1.3% |
| **Housing & community service** | **0.5%** |
| **Health** | **19.3%** |
| **Recreation and culture** | **1.3%** |
| **Education** | **38.3%** |
| Elementary and secondary | 29.6% |
| Higher | 6.2% |
| Libraries | 0.6% |
| Other | 0.4% |
| **Income security** | **8.9%** |
| Disability | 1.3% |
| Welfare and social services | 7.6% |

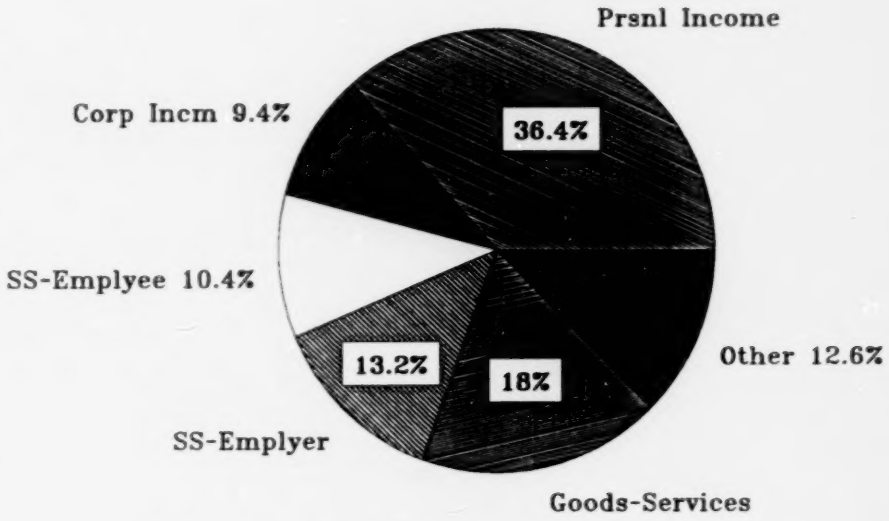
**Sources of Tax Revenues**

While taxes represent a relatively small share of Gross Domestic Product in the United States compared to other OECD countries, we also tend to tax ourselves somewhat differently from other countries.

The pie chart on this page summarizes the tax receipts of federal, state and local governments in the U.S. in FY1995. Compared to the OECD countries, the U.S. gets a somewhat larger share of its taxes from personal income and employee contribution to social security. We derive a somewhat smaller share from taxes on goods and services and employers' share of social security.

We are not, however, overtaxed. But we may be underserved.

Tax Receipts by Source in the United States
FY1995

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